

Docket #: Flynn.P-02

APPLICATION

Of

Patrick Flynn

For

UNITED STATES LETTERS PATENT

On

Panel Raising Apparatus and Method of Use

Sheets of Drawings: Three (3)

BACKGROUND OF THE INVENTION

5 RELATED APPLICATIONS:

This non-provisional application claims the priority date of a prior filed U.S. Provisional application having serial number 60/441,039 and filing date of 1/17/2003 and entitled: Ceiling Panel Raising and Supporting Apparatus. The filing date of this application; 1/20/2003 is within the meaning of the one year privileged period for capture of the
10 Provisional's filing date in that 1/17/2003 was a Saturday and 1/19/2003 was a U. S. national holiday.

INCORPORATION BY REFERENCE:

Applicant(s) hereby incorporate herein by reference, any and all U. S. patents and U.S.
15 patent applications cited or referred to in this application.

FIELD OF THE INVENTION:

This invention relates generally to leverage devices used in building construction and more particularly to an apparatus and method of use for lifting ceiling panels into place and for
20 supporting such panels while they are fastened to ceiling rafters.

DESCRIPTION OF RELATED ART:

The following art defines the present state of this field:

25 Van Patten, U.S. 2,371,561 describes a device having in combination, a member for supporting a sheet of ceiling material, a vertical support adjacent one end of said member, said support being hinged to said member adjacent said end, said support being adapted to be held in vertical position, a support hinged adjacent the other end of said member and swingable to an inclined position to permit one end of said member to be positioned near the

floor to receive said sheet and to then be moved to vertical position to move said member to horizontal position and press said sheet against the ceiling.

5 Fisher, U.S. 2,741,514 describes a ceiling board jack, the combination of which comprises a rectangular-shaped frame including opposed U-shaped tubular members having end bars connecting telescoping side arms, clamping means for securing the side arms in adjusted positions, telescoping posts with Y-shaped elements having, diverging arms on the upper ends positioned to extend downwardly from the ends of, the frame, a cross bar integral, with and carried by the diverging arms of the Y-shaped element of the post at one end of the frame, spaced prongs mounted on said cross bar and extended upwardly therefrom, side bars 10 extended from the side arms of the U-shaped tubular member adjacent said cross bar and pivotally connected to the cross bar, brackets pivotally connected at one of the ends thereof to the ends of the diverging arms of the Y-shaped element of the post at the end of the frame opposite to the end at which the post with the cross bar on the, upper end is positioned, the opposite ends of said brackets being connected, to the side arms of the U-shaped tubular member at the end of the frame opposite to the end to which the cross bar is connected at points spaced inwardly from the end bar of the member, and a ceiling board retaining clip, carried by and extended from the end bar of the U-shaped tubular member to which the brackets are connected.

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Aldrich, U.S. 3,143,219 describes a ceiling board jack comprising a rod, means for pivotally connecting one end of the rod to the upper portion of a wall structure - beneath joists resting thereon, said rod for receiving thereon a ceiling board and being swingable upwardly for elevating said board and supporting same closely beneath the joists for application thereto, a supporting leg, and a pair of arms on one end of said leg straddling the other end portion of the rod, and pivotally secured thereto for hingedly suspending said leg therefrom, said one 25 end of the leg being engageable beneath the rod for supporting same in a raised position with the board thereon, said rod being of circular cross section, said one end of the leg having a substantially concave seat therein for receiving said rod.

Zizak, U.S. 3,642,150 describes a sheetrock scaffolding in the form of an elongated member having a brace at one extremity of the same to which a pair of clamp means are pivotally mounted. The clamps means are adapted to mount the scaffolding on studs on a wall framing and will permit pivoting of the scaffolding with a piece of sheetrock thereon to an elevated position so that it may be held and secured to the ceiling.

Panneton, U.S. 3,910,421 describes ceiling board jacks having for their primary object a device which is versatile and can assist in the placement of boards or panels on ceiling and wall construction. The combination comprising a ceiling board supporting frame and means for pivotally connecting said frame beneath ceiling joists capable of swinging upwardly to bring said boards in contact with ceiling joists for application thereto also suspension means driven in the lower surface of said joists for hingedly supporting said frame and an elevating leg for bringing said board in contact with the ceiling joist.

Mercer, U.S. 4,449,879 describes a dry wall panel lift in which a vertical support has spaced apart legs at about ceiling height and at least two crossbars, one at full height and one at worktable height. A work frame has a pivotal detachable connection at one end to one of the crossbars and legs of worktable height at the other end extending away from the work surface of the frame. A stiff leg is pivotally connected to the end of the work frame opposite the connection and is of length about equal ceiling height. A work stop extends across the work frame in the region remote from the connection. When one end of the work frame is lowered to slope downwardly from the connection, the stop will restrain a ceiling panel on the work frame preparatory to elevating the panel to ceiling height. The work frame can be connected to either of the bars for selectively functioning as a ceiling panel lift or for a worktable support.

Lynn, U.S. 5,163,799 describes a panel lifting and supporting device including a head piece attached to building framing members with a pair of brackets pivotally attached thereto with the brackets receiving elongated 2" by 4" wood members or other similar elongated members

which can pivot from an inclined position in relation to a ceiling or wall to enable a panel to be placed thereon and the free ends of the elongated members then can be elevated and a prop used to support the swingable free ends of the elongated members in a position adjacent the building framing members. Brackets are attached to the outer ends of the elongated
5 members and are interconnected by a handle structure with the prop being provided with a bracket detachably connected to the handle structure to support it in elevated position. The headpiece includes structural features enabling it to be connected with and supported from various building-framing members to provide versatility in use.

- 10 Russell, U.S. 5,320,470 describes a device for aiding in the installation of flat building materials including a plurality of cross bars interconnecting first and second angles so that a first offset is formed between the first angle and the cross bars in order to accommodate a building material. A third angle is pivotally attached by a hinge to the second angle so that a second offset which is less than the first offset is formed between the third angle and the
15 crossbars. Fasteners secure the first and third angles to a building framework.

- Hurilla, Jr., U.S. 5,640,826 describes a sheetrock lifting apparatus having a rectangular support structure with a clamping end and a lifting end, a continuous clamping means located at the clamping end, and an adjustable support pole located at the lifting end. In its
20 preferred embodiment, the continuous clamping means comprises a piano hinge running the continuous width of the clamping end and providing a series of regularly spaced attachment holes. In this configuration, the continuous hinge is fastened to the wall or ceiling beam at the desired number of locations by screws. The rectangular support structure is adjusted to it a length necessary to easily accommodate a section of sheetrock. The sheetrock is then
25 placed against the support structure, and lifted to the ceiling by the user grasping the adjustable support pole. The pole's lower member is then telescoped down to the floor and locked into place, thereby locking into place the sheetrock in an overhead position, leaving the users hands free to continue working and completing the installation in a conventional manner.

Allen, U.S. 5,938,391 describes a panel installation system including a pair of side members hingably coupled with respect to a joist. Also included is at least one panel support coupled with respect to the side members along the length thereof, wherein the support defines a ledge for supporting a panel of dry wall on the side members such that the same may be lifted into a horizontal orientation.

Our prior art search with abstracts described above teaches the construction and use of various devices for application in holding and lifting panels and other construction elements.

The references do not, however, teach the use of a fixed hinged member positioned adjacent a ceiling framework and a movable hinged member positioned in spaced apart juxtaposition, with both hinge members mounted onto common boards and extending at an angle from the ceiling and upon which a panel may be lifted and wedged into place for securement. The present invention fulfills these needs and provides further related advantages as described in the following summary.

SUMMARY OF THE INVENTION

The present invention teaches certain benefits in construction and use which give rise to the objectives described below.

A primary objective of the present invention is to provide an apparatus and method of use of such apparatus that yields advantages not taught by the prior art.

Another objective is to provide such an invention capable of using leverage to raise ceiling panels into place.

A further objective is to provide such an invention capable of supporting ceiling panels while they are being fastened to ceiling rafters or other fixed structure.

A still further objective is to provide such an invention capable of being fabricated at low cost and which is easy to use, requiring less strength than convention methods of accomplishing the same results.

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Other features and advantages of the present invention will become apparent from the following more detailed description, taken in conjunction with the accompanying drawings, which illustrate, by way of example, the principles of the invention.

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BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings illustrate the present invention. In such drawings:

Figure 1 is a perspective view of the preferred embodiment of the invention showing three basic elements of the invention;

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Figure 2 is a perspective view thereof showing the invention in use prior to raising a ceiling panel in place; and

Figure 3 is a perspective view thereof showing the invention in use supporting a fully raised ceiling panel.

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DETAILED DESCRIPTION OF THE INVENTION

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The above-described drawing figures illustrate the invention in at least one of its preferred embodiments, which is further defined in detail in the following description. Those having ordinary skill in the art may be able to make alterations and modifications in the present invention without departing from its spirit and scope. Therefore, it must be understood that the illustrated embodiments have been set forth only for the purposes of example and that they should not be taken as limiting the invention as defined in the following.

The present invention comprises two separate hardware parts that are used in conjunction with each other; a stationary hinging member 10 and a movable hinging member 20 as shown in Fig. 1. In a preferred use of the invention, the stationary hinging member 10 is mounted on an existing wall structure 5 adjacent to ceiling joists 60 of a ceiling structure; normally a part of a construction site for erecting a building. A pair of support struts 40, which may be of two-by-four lumber (2x4s) are engaged with the stationary hinging member 10 at one end of each of the support struts 40. The movable hinging member 20, a second essential part of the invention is fastened near the other ends of the struts 40. A ceiling panel 50 is placed onto, or resting against, the struts 40, and preferably at least tacked to them, and is then rotated into place upwardly until it rests just below the ceiling joists 60, as is best seen in Fig. 2. This is accomplished by using a pusher rod or lifting strut 70, typically also of 2x4 lumber, or the equivalent. The lifting strut 70 is further used to jamb the support struts 40 and the ceiling panel 50 in place until it can be fastened to the ceiling joists 60, as shown in Fig. 3. Clearly, for the support struts 40 and the lifting strut 70, other sizes of lumber may be used, other than 2x4 lumber and materials other than wood may be employed.

To understand how this is accomplished, the two essential parts of the invention will now be described in detail. The stationary hinging member 10, which is mounted near the top of the existing wall 5 or to a set of wall studs 7 or a stud header 8, comprises a base plate 12 of any desired length. The base plate 12 provides mounting holes 14 for fastening it securely in place onto wall 5, studs 7 or header 8. The base plate 12 is mounted in a horizontal attitude close to the top of the existing wall 5, as shown in Figs. 2 and 3. The base plate 12 provides two ears 16, one at, or near, each end, and a round bar 18 or tube secured by the two ears 16 with the bar 18 positioned in parallel with the long axis of the base plate 12. A hinged means for support strut engagement 11, preferably a pair of rotating, U-shaped fixtures, referred to hereafter as "fixtures 11," are pivotally mounted; one at each end of the bar 18. Each one of these fixtures 11 is facilitated for engaging one proximal end 42 of supporting struts 40. In the figures two fixtures 11 and two support struts 40 are shown, but the

number may be one, or more than two as desired. Once the base plate 12, with its bar 18, is mounted at the top of the existing wall 5, struts 40 are fastened into the fixtures 11, by nailing or other means and these struts 40 extend away from the base plate 12 initially at a downward angle. Preferably, struts 40 are long enough to reach from the base plate 12 to the floor surface 80, as shown in Fig. 2, although this is not a necessity. Mounted in this way, the struts 40 are able to be rotated upwardly, as shown in Fig. 2, to a horizontal position adjacent to the ceiling joists 60 as previously mentioned.

The second part of the invention, a movable hinging member 20, comprises a second bar 18' with a pair of the fixtures 11 mounted on it, at, or near its ends, as shown in Fig. 1. A third fixture 11 is mounted in rotation near the center on this second bar 18'. In use, the two end fixtures 11 are fastened to the two struts 40 extending from the fixed hinging member 10, so that the second bar 18' extends across struts 40 and at right angles to them, as best seen in Fig. 2. The movable hinging member 20 is preferably mounted rather near the distal ends 44 of struts 40.

A lifting strut 70 is fastened at one the third (medial) fixture 11 on the second bar 18'. This further strut 40 is preferably just long enough to extend from the second bar 18' to the floor surface 80 when the struts 40 are rotated into the horizontal attitude as shown in Fig. 3, so that it functions to wedge the struts 40 with panel 50 in tight abutment to joists 60 in preparation for fastening panel 50 in place.

In use, the initial struts 40 are rotated downwardly so that they rest at their distal ends 44 against the floor surface 80. Typically, in this rest position, the struts 40 are at an angle to the floor surface 80, preferably at 45 degrees or thereabout. Next, the ceiling panel 50 is brought into a rest attitude laying against the two struts 40, as shown in Fig. 2, with the upper edge 52 of the panel 50 resting against, or nearly against the wall 5 or header 8. Assuming that the lifting strut 70 has been fastened to the medial fixture 11 on the second bar 18', strut 70 extends downwardly at an angle, as shown in Fig. 2. Now, the ceiling panel

50 is held to the two struts 40 using pins 90 which are permanently imbedded in the upfacing surface of struts 40 against which panel 50 rests as shown, and which then penetrate the surface of the ceiling panel 50 to hold it in place on struts 40. Alternately, panel 50 may be held in position on struts 40 by small L-brackets 95, which may be tacked onto struts 40 as shown in Fig. 2. The ceiling panel 50 and the struts 40 are manually pushed upward by the strut 70 so that, together, they rotate from the rest attitude shown in Fig. 2, to the horizontal attitude adjacent to the ceiling joists 60 as shown in Fig. 3. Preferred movements of the various elements in this invention, in all figures, are shown by arrows. In this raised position, the strut 70 is able to be moved into a near vertical position, shown in Fig. 3, for securely wedging the ceiling panel 50 in place until it can be nailed to the ceiling joists 60. Thus, as can be understood by this description and the figures, the raising and holding of a ceiling panel while it is secured may be accomplished by a single person, while in the prior art, the use of two persons to lift and hold heavy ceiling panels, usually of four by eight foot size, has been necessary while a third person secured the panels in place.

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If the base plate 12 is properly positioned, the ceiling panel 50 will be just in contact with the ceiling joists 60 and can be fastened permanently in place without the danger of being dropped or of being miss-positioned. It should be noted that miss positioning of ceiling panels 50 often results from rushing to tack it into place because helpers are holding it above their heads, a tiring position. With the present invention, this is not the case since the panel is resting on studs 40 and is located such that it may be tapped into a final, preferred position prior to fastening. Time, now is not a critical factor in producing the quality work desired in such constructions.

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25 In practice, a third part, a means for strut spacing 30, also referred to as a "bridging strut," may be used to stabilize and better position and secure struts 40 as shown in Fig. 2. This bridging strut 30 spans the space between struts 40 and is attached to them at its ends. One or more of bridging strut 30 may be used as needed for stability and strength.

The several parts of the invention, as described above, may be fastened together using nails, screws or other common fasteners in a manner well known in the construction arts. Means for rotational mounting of one part to the next is also well known in the art.

- 5 The enablements described in detail above are considered novel over the prior art of record and are considered critical to the operation of the instant invention and to the achievement of the above described objectives. The words used in this specification to describe the invention and its various embodiments are to be understood not only in the sense of their commonly defined meanings, but to include by special definition in this specification:
- 10 structure, material or acts beyond the scope of the commonly defined meanings. Thus if an element can be understood in the context of this specification as including more than one meaning, then its use must be understood as being generic to all possible meanings supported by the specification and by the word or words describing the element.
- 15 The definitions of the words or elements of this described invention and its various embodiments are, therefore, defined in this specification to include not only the combination of elements which are literally set forth, but all equivalent structure, material or acts for performing substantially the same function in substantially the same way to obtain substantially the same result. In this sense it is therefore contemplated that an equivalent
- 20 substitution of two or more elements may be made for any one of the elements in the invention and its various embodiments below or that a single element may be substituted for two or more elements in a claim.

- Changes from the claimed subject matter as viewed by a person with ordinary skill in the art, now known or later devised, are expressly contemplated as being equivalents within the scope of the invention and its various embodiments. Therefore, obvious substitutions now or later known to one with ordinary skill in the art are defined to be within the scope of the defined elements. The invention and its various embodiments are thus to be understood to include what is specifically illustrated and described above, what is conceptually equivalent,
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what can be obviously substituted, and also what essentially incorporates the essential idea of the invention.

5 While the invention has been described with reference to at least one preferred embodiment, it is to be clearly understood by those skilled in the art that the invention is not limited thereto. Rather, the scope of the invention is to be interpreted only in conjunction with the appended claims and it is made clear, here, that the inventor(s) believe that the claimed subject matter is the invention.